PTO/SB/22 (10-00)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): WLAN P001

In re Application of: Kangi

Application Number: 09673340 | Filed: 14 OCT 03

For:

Group Art Unit: 1774 | Examiner: Thompson

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

☐	One month (37 CFR 1.17(a)(1))	$
☒	Two months (37 CFR 1.17(a)(2))	$ 410
☐	Three months (37 CFR 1.17(a)(3))	$
☐	Four months (37 CFR 1.17(a)(4))	$
☐	Five months (37 CFR 1.17(a)(5))	$

MRD 4/25/03
2252

☒ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: $ 205.

☐ A check in the amount of the fee is enclosed.

☒ Payment by credit card. Form PTO-2038 is attached.

☐ The Commissioner has already been authorized to charge fees in this application to a Deposit Account.

☐ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____. I have enclosed a duplicate copy of this sheet.

I am the ☐ applicant/inventor

☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ attorney or agent of record.

☐ attorney or agent under 37 CFR 1.34(a). Registration number if acting under 37 CFR 1.34(a)_____.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

25 Apr 2003
Date

Signature

Carl Oppedahl
Typed or printed name

05/01/2003 KHASHING 00000015 09673340
01 FC:1252 410.00 OP

06/28/2004 DLARSEN1 00000001 09673340
01 FC:2252 205.00 OP

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of _____ forms are submitted.

Burden Hour Statement: This form is estimated to take 0.1 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Employee Locator

query by employee number

Name	THOMPSON CAMIE S
Employee No	79244
Organization	GROUP ART UNIT 1774
Email	camie.thompson@uspto.gov

Primary	Bldg	Floor	Suite	Corr.	Room	Zone	Planned Move
*	REM	5		C	71		

CONTACT NUMBER

Primary	Type	Number	Ext	Planned Move
*	Phone	(571)272-1530		

6/28/04
CORRECT 5/1/03
ENTITY FOR
SMALL ENTITY.
NEED TO SCAN
INTO IFW ???
DOUG

UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no. 09/673,340 Filed: October 14, 2000

Examiner: Camie S. Thompson Art unit: 1774

Conf. No. 5113 Attorney docket no. WLAN.P001

Certificate of transmission

This certifies that this paper is being transmitted by fax to 703-872-9311 on April ~~29~~ 25, 2003.

Carl Oppedahl

AMENDMENT

Amend the first paragraph on page 1 as follows:

The invention concerns a structural component consisting of fibre-reinforced thermoplastic plastic as well as a method for manufacturing such a structural component and an installation for implementing this method.

Delete the first paragraph on page 3.

Amend claims 2-20 as follows:

2. The structural component in accordance with claim 1, wherein the interfaces are designed as connecting layers, which form a transition zone between long-fiber matrix and continuous fiber strands.

3. The structural component in accordance with claim 1, wherein the interfaces are designed as structured interfaces having uneven shapings.

4. The structural component in accordance with claim 1, wherein the continuous fiber

strands of the supporting structure form at least one closed mesh.

5. The structural component in accordance with claim 1, wherein the continuous fiber strands run in different directions and are thermoplastically bonded together at internal load-transmitting connecting areas in the manner of a framework.

6. The structural component in accordance with claim 1, wherein the matrix material of the long-fiber reinforcement and of the continuous fiber strands are identical.

7. The structural component in accordance with claim 1, wherein the matrices of the long-fiber-reinforcement and of the continuous fiber strands consist of polypropylene, polyamide, polyethylenetherephtalate, polybutylene-therephtalate, thermoplastic polyurethanes, polycarbonate, polyacrylics, polyimide, polyphenylsulphide or polyetheretherketone and that the reinforcing fibers of the continuous fiber strands consist of glass, carbon or aramide and the long-fiber reinforcement consists of glass.

8. The structural component in accordance with claim 1, wherein the reinforcement of the long-fiber matrix has a fiber content of 15-25% by volume and that the continuous fiber strands have a fiber content of at least 40 % by volume.

9. The structural component in accordance with claim 1, wherein the continuous fiber strands are twisted.

10. The structural component in accordance with claim 1, wherein the continuous fiber strands are needle-bonded, wrapped or enveloped by a braided tube.

11. The structural component in accordance with claim 1, wherein the long-fiber reinforcement has a great proportion of fibers with a length of at least 5 mm.

12. The structural component in accordance with claim 1, wherein load-bearing inserts are integrated, which are directly connected with the continuous fiber strands.

13. The structural component in accordance with claim 1, wherein further inlays are integrated, e.g., high-strength continuous fiber-reinforced tubular profile parts and/or local continuous fiber fabric inlays, which are connected with the continuous fiber strands and fused together with the long-fiber matrix.

14. The structural component in accordance with claim 1, wherein the continuous fiber strands form "three-dimensional" profile cross sections.

15. The structural component in accordance with claim 1, wherein external connecting areas of the continuous fiber strands are foreseen.

16. The structural component in accordance with claim 1, wherein the layer thickness of the continuous fiber strands is at least as large as the layer thickness of the long-fiber matrix located above it.

17. The structural component in accordance with claim 1, wherein the load-transmitting connecting areas are designed with a large surface area.

18. The structural component in accordance with claim 1, wherein the connecting areas have a thin long-fiber intermediate layer.

19. The structural body consisting of at least two structural components in accordance with claim 1, which structural components are connected to one another at external connecting areas of the continuous fiber strands.

20. The structural body with at least two structural components in accordance with claim 1,

which are designed as half-shells and are connected to one another and form a hollow profile girder.

REMARKS

This paper responds to the Office Action dated November 26, 2002. The Examiner has rejected claims 1-20 on a variety of grounds and has made the rejection "final."

Attached forms. Attached are forms PTO/SB/22 (extension of time) and PTO-2038.

Rejection as to form. The Examiner rejected claims 2, 6-8, 11-12 and 16 as to form. Amendments have been made to each of these claims to overcome the rejection.

As for claim 16, the Examiner expresses the view (page 4, paragraph 9) that it is somehow indefinite to say that " the layer thickness of the continuous fiber strands is at least as large as the layer thickness of the long-fiber matrix located above it." The Examiner's attention is respectfully drawn to page 17, lines 16-21 where the two thicknesses are described in some detail. The Examiner's attention is also respectfully drawn to Fig. 24b which plainly shows the two thicknesses d3 and d2. It is suggested that when the detailed discussion in the specification, and the illustration in the figure, are considered, there is no indefiniteness.

Rejection over art. The Examiner has for a second time rejected all examined claims over two references: US Pat. No. 5,173,142 to Billiu ("Billiu"), and US Pat. No. 5,362,431 to Guerrini et al. ("Guerrini"). All examined claims depend from claim 1, which was amended in its entirety on September 24, 2002 (paper no. 17). This necessarily changed all of claims 2-20 due to dependency upon claim 1.

It is perhaps notable that the art-rejection portion of the March 26, 2002 Office Action (paper nos. 14-15, page 8, paragraph 18 to page 10, paragraph 21) is word-for-word identical with the

art-rejection portion of the November 26, 2002 Office Action (paper nos. 19-20, page 5, paragraph 12 to page 8, paragraph 15). This is notable because the pending claims at the time of the second Office Action were quite different from the pending claims at the time of the first Office Action. Applicant's attorney has difficulty understanding how, despite the amendment of claim 1 in its entirety (which changed all of the other examined claims, all of which depend from claim 1), it could possibly be that the rejection stated prior to that amendment could properly apply, word for word, to the amended claims.

The Examiner's attention is respectfully drawn to the claim elements a, b, c, d, e, and f which were set forth in detail in the September 24, 2002 response (page 3) and which are likewise set forth in detail here:

element	limitation	found in Billiu	found in Guerrini
	A structural component of fiber-reinforced thermoplastic material comprising:	yes	yes
a	a shape-forming, long-fiber-reinforced thermoplastic matrix and		yes
b	separate, single load-bearing plastified and consolidated continuous fiber strands (3) with a thermoplastic matrix,	no	no
c	in a defined position within the structural component, the positions of the shape-forming long-fiber-reinforced thermoplastic matrix and the separate, single load-bearing plastified and consolidated continuous fiber strands with a thermoplastic matrix defining interfaces therebetween;	no	no
d	said continuous fiber strands being interconnected and having at least one load-transmitting flat internal connecting area (7) between two continuous fiber strands	no	no

e	and where the single continuous fiber strands are forming a load-bearing supporting structure (4) which is integrated in	no	no
f	and thermoplastically bonded to the long-fiber-reinforced thermoplastic matrix at the interfaces (6) therebetween.	no	no

These features are extensively explained and illustrated in the application as filed, for example:

feature b) is shown in Figs. 1b, 2, 3, 25 (continuous fiber strands (3));

feature c) is shown in Figs. 2, 15, 25 (in a defined position);

feature d) is shown in Fig. 1b (flat connecting area (7));

feature e) is shown in Figs. 2, 3 (supporting structure (4)); and

feature f) is shown in Fig. 1a (interfaces (6)).

The Examiner's argument. At page 6, paragraph 13, the Examiner says:

> Guerrini also discloses using continuous fibers with a thermoplastic matrix... (column 1, lines 1-31)

While this is true, Guerrini says nothing of separate single load-bearing continuous fiber strands according to limitation b. Indeed, conspicuously absent from the Office Action is any mention or discussion of limitations b-f of the pending claim 1.

At page 8, paragraph 16, the Examiner states:

> The Guerrini reference discloses that the fibers used in the long-fiber reinforcement are long-fiber continuous filaments as shown by the Guerrini reference in column 1, lines 54-60 and Example 1.

It is respectfully noted that this statement is untrue. Guerrini does not mention "long-fiber continuous filaments." In fact it is an oxymoron to speak of "long-fiber continuous filaments" because there is no such thing. Fibers can be:

- long-fiber material, such as the granules of Guerrini with cut long fibers and a length of preferably 2-15 mm; or they can be

-continuous filaments with continuous fibers (which are not cut).

But by definition a fiber cannot simultaneously be "long-fiber" and "continuous."

The Examiner is requested to take note that the continuous filaments in Guerrini are **cut** to produce long-fiber granules. Guerrini at Example 1 (col. 4, lines 43-46) explains that the product was **cut** and "Ten mm long granules were obtained." Thus, importantly, the very reference Guerrini that the Examiner holds out to be authoritative also makes clear that "long-fiber" and "continuous" are two distinct things.

At page 9, paragraph 16, the Examiner further states:

> The Guerrini reference discloses that continuous fibers strands in a thermoplastic matrix give rise to the increased mechanical properties in column 1, lines 60-68.

It is respectfully noted that this statement is untrue. No such statement appears in Guerrini. Guerrini contains no teaching or suggestion of continuous fiber strands such as those in limitation b of claim 1. Guerrini only says that long-fiber composites have better mechanical properties than short-fiber composites, but have lower mechanical properties than continuous-fiber composites.

The Guerrini reference teaches away from using (known) continuous fiber reinforcement in composites. Instead it teaches to use improved short-fiber materials (the granules) for the production of shaped bodies - instead of components with continuous fiber reinforcement (which are stronger but expensive to produce).

At page 6, paragraph 13, the Examiner says:

> .it is know[n] in the art that continuous fiber strands that run in different directions in the thermoplastic matrix give rise to the increased mechanical properties as shown by column 1, lines 60-68 of Guerrini.

It is respectfully noted that the cited passage in Guerrini says no such thing. The cited passage

says no such thing about continuous fiber strands. If the Examiner persists in this view as to what is "known in the art," then motivated by the case of *In Re Ahlert and Kruger*, 165 USPQ 418 (CCPA 1970) applicant's attorney hereby asks whether the Examiner can show support for this view.

A discussion of Guerrini. It may be helpful to say more about Guerrini.

The subject matter of Guerrini is to produce improved long-fiber composite material (granules) for the subsequent preparation of shaped bodies in a simple way (see column 2, lines 47-56).

This process comprises:

- impregnating continuous fibers with a thermoplastic polymer powder
- to form a continuous filament, calendering the filament
- and then cutting the filament into granules, having a length in the range of 2 to 100 mm and preferably from 2 to 15 mm.

These granules of long-fiber material are then used to produce shaped bodies containing short-fiber-reinforcement only (and without any continuous fiber reinforcement). There is no hint or suggestion in Guerrini to integrate continuous fiber reinforcements into a short fiber composite component.

With Guerrini it is not possible to produce structural components for demanding load-bearing functions according to the present invention.

The objective and the solution of Guerrini are entirely different from the objective and the solution of the present invention.

The claimed invention. It may also be helpful to say more about the claimed invention.

The objective of the claimed invention is to create a load-bearing structural component, which can fulfill demanding load-bearing functions and which can be manufactured cost-effectively and in different shapes and with short cycle times in a series production.

The integrated load-bearing supporting structure (4) is integrated in the shape-forming long-fiber-reinforced thermoplastic matrix (2) and is thermoplastically bonded (6) to it. The structure is built with separate single load-bearing continuous fiber strands (3) which must be in a defined position within the structural component and which are interconnected at load-transmitting flat internal connecting areas (7) between the single continuous fiber strands.

With this strong integrated load-bearing supporting structure, which is positioned and integrated in the long-fiber thermoplastic matrix, the objective of the present invention is achieved.

In contrast to this the references have completely different objectives and solutions, and there are no hints or suggestions of the limitations of the claim. The Examiner is respectfully requested to consider limitations b through f, which are now discussed one by one.

b) separate, single load-bearing plastified and consolidated continuous fiber strands with a thermoplastic matrix (3) The thin continuous filaments of Guerrini are not load-bearing, strong continuous fiber strands and they are not within the structural component. There is no continuous reinforcement in the shaped bodies of Guerrini.

c) in a defined position within the structural component, the positions of the shape-forming long-fiber reinforced thermoplastic matrix and the separate, single load-bearing plastified and consolidated continuous fiber strand with a thermoplastic matrix defining interfaces therebetween

d) said continuous fiber strands being interconnected and having at least one load-transmitting flat internal connecting area (7) between two continuous fiber strands

e) and where the single continuous fiber strands are forming a load-bearing supporting structure (4) which is integrated in

f) and thermoplastically bonded to the long-fiber-reinforced thermoplastic matrix at the interfaces (6) therebetween.

The references Billiu and Guerrini do not disclose nor hint at a structural component with limitations b, c, d, e, and f.

The Examiner is respectfully requested to point out where in the references even one of the limitations b, c, d, e, and f may be found. If the Examiner cannot do so, it is respectfully requested that the rejection be withdrawn.

Reconsideration is requested.

Respectfully submitted,

Carl Oppedahl

Carl Oppedahl, PTO Reg. No. 32,746
Oppedahl & Larson LLP
P O Box 5068
Dillon, CO 80435-5068
telephone 970-468-6600
email oppedahl@patents.com

Separate sheet in accordance with Rule 121

First paragraph on page 1.

The invention concerns a structural component consisting of fibre-reinforced thermoplastic plastic [in accordance with the generic term of claim 1] as well as a method for manufacturing such a structural component and an installation for implementing this method.

2. The [S]structural component in accordance with claim 1, [characterized in that] wherein the interfaces [(6) at least partially] are designed as connecting layers [(6a)], which form a transition zone between long-[fibre] fiber matrix [(2)] and continuous [fibre] fiber strands [(3)].

3. The [S]structural component in accordance with claim 1, [characterized in that] wherein the interfaces [(6)] are designed as structured interfaces having uneven shapings [(6b)].

4. The [S]structural component in accordance with claim 1, [characterized in that] wherein the continuous [fibre] fiber strands [(CF)] of the supporting structure form at least one closed mesh [(10)].

5. The [S]structural component in accordance with claim 1, [characterized in that] wherein the continuous [fibre] fiber strands run in different directions and are thermoplastically bonded together at internal load-transmitting connecting areas [(7)] in the manner of a framework.

6. The [S]structural component in accordance with claim 1, [characterized in that] wherein the matrix material of the long-[fibre] fiber reinforcement [(2)] and of the continuous [fibre] fiber strands [(3) in preference is] are identical[, at least, however, compatible to such an extent, that the two materials are mixable together at the interfaces (6) through diffusion].

7. The [S]structural component in accordance with claim 1, [characterized in that] wherein

the matrices of the long-[fibre] fiber-reinforcement [(2)] and of the continuous [fibre] fiber strands [(3)] consist of polypropylene [(PP)], polyamide [(PA)], polyethylenetherephtalate [(PET)], polybutylene-therephtalate [(PBT)], thermoplastic polyurethanes [(PUR)], polycarbonate [(PC)], polyacrylics, polyimide [(PI)], polyphenylsulphide [(PPS)] or polyetheretherketone [(PEEK)] and that the reinforcing [fibre] fibers [(13)] of the continuous [fibre] fiber strands [in preference] consist of glass, carbon or aramide and the long-[fibre] fiber reinforcement [(12) preferably] consists of glass.

8. The [S]structural component in accordance with claim 1, [characterized in that] wherein the reinforcement [(12)] of the long-[fibre] fiber matrix has a [fibre] fiber content of 15 - 25 % by volume and that the continuous [fibre] fiber strands [(13)] have a [fibre] fiber content of at least 40 %[, in preference 45 - 60 %] by volume.

9. The [S]structural component in accordance with claim 1, [characterized in that] wherein the continuous [fibre] fiber strands are twisted [(15)].

10. The [S]structural component in accordance with claim 1, [characterized in that] wherein the continuous [fibre] fiber strands are needle-bonded [(18)], wrapped [(16)] or enveloped by a braided [(17)] tube.

11. The [S]structural component in accordance with claim 1, [characterized in that] wherein the long-[fibre] fiber reinforcement [(12)] has a great proportion of [fibres] fibers with a length of at least 5 mm[, whereby the fibre fiber length preferably to a great extent is within a range of 10-30 mm].

12. The [S]structural component in accordance with claim 1, [characterized in that] wherein load-bearing inserts [(21) (e.g., seat-belt anchoring points)] are integrated, which are directly connected with the continuous [fibre] fiber strands [(3), resp., are surrounded by them].

13. The [S]structural component in accordance with claim 1, [characterized in that] wherein further inlays [(22)] are integrated, e.g., high-strength continuous [fibre] fiber-reinforced tubular profile parts [(23)] and / or local continuous [fibre] fiber fabric inlays [(24)], which are connected with the continuous [fibre] fiber strands and fused together with the long-[fibre] fiber matrix.

14. The [S]structural component in accordance with claim 1, [characterized in that] wherein the continuous [fibre] fiber strands form "three-dimensional" profile cross sections [(25, 26, 27)].

15. The [S]structural component in accordance with claim 1, [characterized in that] wherein external connecting areas [(8)] of the continuous [fibre] fiber strands are foreseen.

16. The [S]structural component in accordance with claim 1, [characterized in that] wherein the layer thickness [(d3)] of the continuous [fibre] fiber strands [(3)] is at least as [great] large as the layer thickness [(d2)] of the long-[fibre] fiber matrix [(2)] located above it.

17. The [S]structural component in accordance with claim 1, [characterized in that] wherein the load-transmitting connecting areas are designed with a large surface area [(F7)].

18. The [S]structural component in accordance with claim 1, [characterized in that] wherein the connecting areas [(7)] have a thin long-[fibre] fiber intermediate layer [(9)

19. The [S]structural body [(90)] consisting of at least two structural components [(1)] in accordance with claim 1, which structural components are [in preference] connected to one another at external connecting areas [(8)] of the continuous [fibre] fiber strands.

20. The [S]structural body with at least two structural components [(1)] in accordance with claim 1, which are designed as half-shells and are connected to one another and[, e.g., in the form of a U-profile (92) together with a cover (93)] form a hollow profile girder [(91)].